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of antiquity was less strong than elsewhere. "In spite of this constant growth," he continued, "there have appeared few great generalizations in botany, and so it is not absolutely correct to speak either of a botanical philosophy or of a philosophical botany. In common with all branches of biological science, botany must rest content with details and small excursions into neighboring fields of common interests. This is the fate of all modern investigation."

Dr. Bessey responded to 'How I manage the Boys.' He said that the fact was the boys managed him. He was like the prudent driver of a team, who, when he saw it was about to stop, pulled the reins and cried 'whoa,' or like the man who 'manages' his household, or like the meteorologist who manages the weather. As to the relation of the Seminar to his department, he said it must be remembered that the Seminar had grown up as an independent society and was not a part of the department. It was an ally—a close friend. Its help was like the help that a good wife is to a man, and the same kind of 'management' existed in each case. He had always adhered to Joseph Henry's rule; he let the boys work, and let them take up any line they would without restraint.

Responses were made by Dean Sherman, of the chair of English literature, who commented favorably upon the fraternization of scientific savants and literary scholars, who aforetime were too much inclined to fall upon each other by the way, and by the Chancellor of the University, who saw in the present occasion the beginning of a closer union of the workers in the different fields of science in the University, as well as the promise of higher and broader work such as should be found among scholars; "the work of the Seminar is true university work, and the spirit it fosters is that which is the peculiar feature of the genuine university."

FOURTEENTH ANNUAL REPORT OF THE COMMITTEE ON INDEXING CHEMICAL LITERATURE.\*

THE Committee on Indexing Chemical Literature presents to the Chemical Section its fourteenth annual report. During the year ending August, 1896, there has been exhibited much activity in chemical bibliography and indexing; several valuable works have been completed and many important undertakings have been begun.

WORKS PUBLISHED.

*A Dictionary of Chemical Solubilities. Inorganic.* By ARTHUR MESSINGER COMEY. New York and London. 1896. pp. xx + 515. 8vo.

Prof. Comey is to be complimented on the completion of the first part of his extensive undertaking, and chemists are to be congratulated on the publication in such good form of so important an aid to research. It is to be hoped that this volume will be so well received as to encourage the author to follow promptly with the organic section.

*Index to the Literature of the Detection and Estimation of Fusel Oil in Spirits,* by W. D. BIGELOW. *J. Amer. Chem. Soc.*, Vol. xviii., No. 4, p. 397.

This was announced in our report for 1895.

*Bibliography of Embalming,* in a Thesis entitled: 'Embalming and Embalming Fluids,' by CHARLES W. McCURDY (of the University of Idaho). *Post-graduate and Wooster Quarterly*, April, 1896.

A very full bibliography of this unique subject, which has its chemical aspects as well as its grave ones. It comprises about 500 entries, in several modern languages, arranged alphabetically by authors.

\* Presented at the Buffalo Meeting of the American Association for the Advancement of Science.

*References to Capillarity*, by JOHN URI LLOYD, in his 'Study in Pharmacy.' Privately Printed. Cincinnati, 1895-96. 8vo.

*Atomic Weights* form the subject of a brief bibliography (24 titles) accompanying an article on the same topic by ALEXANDER SCOTT. *Science Progress* Vol. I., p. 542 (August, 1894).

*The Composition of Water*, a short bibliography, by T. C. WARRINGTON. *Chem. News*, Vol. lxxiii., p. 137 *et seq.* (March, 1896.)

*A Short List of Books on Chemistry*. Selected and annotated by H. CARRINGTON BOLTON, *Scientific American Supplement*, October 19, 1895.

*Bibliography as a feature of the Chemical Curriculum*. By H. CARRINGTON BOLTON. *SCIENCE*, October 4, 1895.

*Review of American Chemical Research*, edited by ARTHUR A. NOYES. In the *Technology Quarterly*, issued by the Massachusetts Institute of Technology, Boston, Mass.

The first paper appeared in the number for April, 1895 (Vol. viii., p. 90); the reviews consist of abstracts of papers in periodicals, grouped under the following heads: General and Physical Chemistry, Inorganic, Organic, Technical, Sanitary, Agricultural, Vegetable, Metallurgical, Assaying, Geological, Mineralogical, Apparatus. Each abstract is signed by the abstractor.

This review promises to be an important contribution to contemporary chemical science of America, and deserves to be well supported.

*Enumeration of Titles of Chemical Papers*. This bibliography has been published monthly since May, 1894, in *Science Progress*, London. It embraces titles (without comments) in several European languages.

*Bibliography of Agricultural Chemistry* (*American*).

The several publications of the scientific bureaus of the United States government contain many valuable contributions to chemistry in its applications to agriculture and the arts, widely scattered in their pages, and it has been difficult to keep informed with reference to them. Thanks, however, to the excellent bibliographical work of the Office of Experiment Stations, U. S. Department of Agriculture, Washington, D. C., the chemical treatises published in the Bulletins of the State Institutions are made accessible; this is accomplished in the three publications here named:

*Experiment Station Record*, Vol. iii., No. 12 (July, 1892). *Bulletin* No. 19 (1894), and *Bulletin* No. 23 (1895). Organization Lists of the Agricultural Experiment Stations, U. S. Department of Agriculture, Office of Experiment Stations.

These contain: 'Lists of Station Publications,' giving dates, bulletin numbers and titles of each bulletin, under each State, alphabetically arranged. For the agricultural chemist these bibliographical helps are too important to be overlooked.

The Committee also chronicles the publication of the following valuable aids to chemical research:

*Synopsis of Current Electrical Literature during 1895*, by MAX OSTERBERG. New York (D. van Nostrand Co.), 1896. pp. xiii+143. 8vo.

This is a classified index, with an index to authors, compiled from fifty-nine foreign and American periodicals; it is intended to be published annually.

*General-Register zu Ladenburg's Handwörterbuch der Chemie*. Breslau, 1895. pp. 160. 8vo.

*Bibliographie des travaux scientifiques* \* \* \* publiés par les sociétés savantes de la France, dressée sous les auspices du ministère de l'instruction publique; par J. Deniker. Paris, 1895. 4to.

## REPORTS OF PROGRESS.

The Index to the Mineral Waters of the World, by Dr. Alfred Tuckerman, noticed in previous reports, has been completed and accepted for publication by the Smithsonian Institution.

The manuscript of a new edition of the 'Catalogue of Scientific and Technical Periodicals, 1665-1882,' by Dr. H. Carrington Bolton, has been completed and is now going through the press. The new edition will be issued by the Smithsonian Institution as a volume of the Miscellaneous Collections. The bibliography includes chemical journals, and is brought down to the year 1895.

Dr. Bolton reports progress on a supplement to his 'Select Bibliography of Chemistry, 1492-1892,' the printing of which is, however, postponed.

Prof. James Lewis Howe reports the completion of the manuscript of an Index to the Literature of Platinum and its Compounds; this will be presented to the Chemical Section at the same session with this report.

Prof. F. P. Venable has completed an Index to the Literature of the Periodic Law. It accompanies his 'Development of the Periodic Law,' published by the Chemical Publishing Co., Easton, Pa.

## WORKS IN PREPARATION.

Dr. Alexis A. Julien has no less than three bibliographical works well advanced:

(1) A Bibliography of Sand (including chemical analysis, etc.).

(2) A Bibliography of Pedesis, or the Brownian movement.

(3) A Bibliography of the Condensation of Gases on the surface of Solids.

Dr. Arthur C. Langmuir is engaged on an Index to the Literature of Zirconium.

Mr. George Wagner, of the University of Kansas, has undertaken an Index to the Literature of Oxygen, on a large scale. In

this work he will have the counsel of Prof. Albert B. Prescott.

Dr. C. H. Jöuet has the manuscript of an Index to the Literature of Thorium well advanced towards completion.

Prof. Rudolph A. Witthaus has compiled a Bibliography of Forensic Toxicology, which will appear in Vol. iv. of Witthaus and Becker's Medical Jurisprudence, New York, 1896.

The Journal of the Society of Chemical Industry announces a Collective Index for the whole series, 1881-1895. This is to be ready in 1896 and will form a volume of about 500 pages quarto.

Attention is called to a plan for facilitating bibliographical researches, adopted by the American Pharmaceutical Association. The Research Committee of this Association employs a reference reader whose duty it is to supply original literature to investigators working in the Committee and with it. A list of the chief serials and a few encyclopedic works are placed in the hands of those who apply for the services of the reader. Transcripts, abstracts and translations are supplied. The service is chiefly for literature beyond the smaller libraries, and is under the direction of the Chairman of the Committee.

Perhaps a similar scheme might be organized within the American Association for the Advancement of Science.

In conclusion, the Committee on Indexing Chemical Literature desires to state to those not acquainted with the announcements made in the preceding annual reports, that it labors to foster individual undertakings in chemical bibliography, to prevent futile duplication of work, to record in these reports completed bibliographies and new enterprises, as well as to chronicle progress in bibliography in lines bordering on chemistry. Suggestions as to topics, methods, channels of publication, etc., will be cordially furnished by the Committee. Ad-

dress correspondence to the Chairman, at Cosmos Club, Washington, D. C.

H. CARRINGTON BOLTON, *Chairman*,

F. W. CLARKE,

A. R. LEEDS,

A. B. PRESCOTT,

ALFRED TUCKERMAN,

H. W. WILEY, *Committee.*

#### CURRENT NOTES ON PHYSIOGRAPHY.

##### PACIFIC OCEAN CURRENTS.

DR. CÄSAR PULS contributes an elaborate discussion, based on original records, of the surface temperatures and currents in the equatorial belt of the Pacific Ocean to the 'Archiv der Deutschen Seewarte' (Hamburg, XVIII., 1895, 1-38, with 12 monthly charts). The chief interest attaches to the equatorial counter current, which maintains its eastward course all across the ocean between the wind-driven, west-flowing equatorial currents on the north and south, the latter being much the stronger of these two. The north equatorial current, from  $9^{\circ}$  to  $20^{\circ}$  N., is strongest in March; it is not altogether supplied at its east end by the weak southward current along our west coast; it receives much water from the counter current which turns northwest at its east end, and not southeast, as ordinarily mapped. At the west end of the north equatorial current, part turns north to flow past Japan, and a lesser part south to join the counter current. The great south equatorial current, from  $12^{\circ}$  S. to  $5^{\circ}$  N., is strongest in September, and has its highest velocity along its northern margin, sometimes over 100 nautical miles in 24 hours. It is largely supplied by up-welling water along the west coast of South America, where the wind blows off-shore; the Humboldt surface current is not sufficient to feed it. Part of this great equatorial current turns south before reaching the Solomon Islands; the rest passes on north of New Guinea and turns sharply back at the 'root' of the

counter current, except from December to May, when this branch is turned back on itself by the northwest monsoon then and there prevalent, forming a short counter current south of the equator. The north counter current, extending all across the ocean, is said to be much influenced, but not produced, by the winds. Near its west end it is favored for three-quarters of the year by the southwest monsoon; and from July to October, when it is, as a whole, strongest and broadest, its east half is favored by the narrow belt of monsoon winds there and then occurring. It is narrowed and weakened in our winter, when these favoring winds are wanting, and from January to March, under the extended northeast trade, it may be stopped or locally reversed; but where and whenever these adverse winds weaken or shift, the current reappears, and sometimes with increased strength. Yet, as a whole, it is regarded as a compensation current, discharging eastward the excess of the wind-driven south equatorial current, which has no sufficient escape at its west end.

If a narrow current, 8,000 miles long, can be a compensation current, a previous note on this subject in SCIENCE (III., 1896, 921) should be somewhat modified. It may be added that according to these descriptions the Pacific counter current serves indirectly to carry water continually from the southern into the northern hemisphere, receiving a supply from the south at its west end, and discharging its flow chiefly northward at its east end; thus doing what is more directly accomplished in the Atlantic by the cross-equator extension of the south equatorial current past the Guiana coast. In the Pacific, as in the Atlantic, a compensation for this excess of surface movement into the northern hemisphere must exist beneath the surface, and with fuller data as to deep temperatures this may aid in deciding the cause of the